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Migration of Our Birds in the Spring of 1917.

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The writer made his highest record for the spring migration of our birds this year. More extended observations, and the assistance of an excellent ornithologist, Mr. John C. Birdsall Jr., may account for the notable increase in the number of species found.

In nine years of observation in spring, the dates of migration for the Robin were almost equally divided between February and March. The species arrived four times in February and five times in March. In 1915, Feb. 13, and in 1916, Feb. 22, were the dates of arrival. This spring the Robin was our earliest migrant, arriving on Feb. 23. The Hairy Woodpecker, which was recorded on the 15th of February, is really a winter species.

The Song Sparrow is a close competitor with the Robin for being the first of our birds to return in Spring. All the dates of arrival for the three last years have been in February. The earliest was Feb. 16, 1916; the latest, Feb. 26, 1917. Although the Song Sparrow may be regarded as a winter species still there was both in 1916 and in 1917 an absence of three or four weeks before the bird first appeared in February. And after this date the species was seen at least irregularly.

Another competitor as the earliest migrant in spring is the Bluebird. And if the records for nine years be used, this species must be given first place, for six years out of nine the Bluebird arrived in February. Like those of the Robin and Song Sparrow, the dates range from the middle of that month until almost the end. In three years the earliest arrival was on Feb. 13, 1915; and the latest, on Feb. 26, 1917.

The Purple Finch was first seen this spring on March 5—the earliest record that I have ever made for the species. The 31st of May was the date on which the Purple Finch was last observed.

This is also my latest spring record for the species. In 1916 the bird was found first on April 10, and last on April 26; in the spring of 1915 no records of the Purple Finch were obtained. These dates indicate that the present year was an unprecedented one for the Purple Finch.

In looking over my records of the Tree Sparrow for three years, I find that the species arrived irregularly in March. Two of the dates are in the first part of the month—Mar. 6, 1915; Mar. 11, 1917. The other date was as late as the 31st of that month. The Tree Sparrow is a winter species that is often absent for long periods, and may thus be regarded as a true migrant. This sparrow usually leaves us about the middle of April. Dates of departure for three years are as follows: Apr. 15, 1915; Apr. 9, 1916; Apr. 19, 1917.

The spring arrival of the Brown Thrasher is very interesting. Previous study of the species has shown that it comes with remarkable regularity between the 10th and 17th of April—the records of eight years being conclusive proof of this statement. But the present year was quite exceptional to all others, for the Brown Thrasher was recorded for the first time in March—on the 31st. Curiously enough the next time the species was observed was on April 13, and for three years this was the date of arrival.

The migratory records of the White-throated Sparrow for four years show usual regularity. Only in one year, 1916, was there a notable difference from the dates of the other years. In that spring the species arrived on April 16 and departed on May 12, both of which dates were the earliest in four years. In the other years the time of arrival was between the 20th and 28th of April; the time of departure, between the 22nd. and 25th of May.

In four years the spring migration of the Spotted Sandpiper was very regular. In 1915 and 1917, the date was identical—April 21. In 1914 this sandpiper arrived on April 25; in 1916, on April 19, which was the earliest record made in six years.

For three years, 1914-1916, the Baltimore Oriole arrived with great regularity. All the dates of migration were between the 24th. and 30th of April. In 1917 this species arrived on May 10, which is the latest migratory record I have ever made for the Baltimore Oriole. During the latter part of April and the first days of May this year, which were unusually cool, there was a notable absence of migrants.

Usually the first, and occasionally the second, week in May is

the time of arrival for the Orchard Oriole. In May the earliest date in six years was the 3rd, in 1913; the latest, the 11th, in 1916. Only one date in April was found among my notes—the 28th, in 1914.

The spring migration of the Yellow Warbler usually occurs in the last week of April. In four years the date of arrival was between the 26th and 30th of April, two years the day being the 30th. In two other years this warbler came on May 3, 1912, and May 11, 1917.

The Cedarbird is a species that shows marked irregularity in its spring migration. Looking over the records of six years, I found only one for April—the 30th, in 1916. All the others are scattered through May—the 2nd, in 1914; the 11th in 1917; the 14th in 1915; the 16th in 1913; the 24th in 1912. Cedarbirds wander about much, and to this habit I ascribe their great irregularity in appearing in Spring.

Normally the spring migration of the Red-headed Woodpecker should occur late in April. Previous to 1914, this species arrived only once in March—on the 18th, in 1911. There was also but one migratory record early in April—the 4th, in 1910. The present year my latest date of the spring migration of the Red-headed Woodpecker was made—May 13. In 1914 and 1915 this woodpecker did not migrate, having remained during the winter.

The height of the warbler migration occurred on the 16th and 17th of May, in 1917—which was a little late. The weather was very cool for the first half of the month, and retarded the movement of the migrants. The normal time for the great influx of the warblers is the second week of May. The lateness of arrival this spring prolonged the stay of quite a number of the warblers into June. I never before made so many warbler records in June.

Another unprecedentedly late migrant this spring was the Yellow-billed Cuckoo—arriving on June 13. The Black-billed Cuckoo was first seen on May 19, and again on June 7.

Certain species that were very locally distributed were probably not recorded on the actual date of migration. Among these are the Grasshopper Sparrow, Prairie Horned Lark, Sycamore Warbler, Acadian Flycatcher.

FEBRUARY		Arrival	Departure
Arrival	Departure	26 Song Sparrow	
15 Hairy Woodpecker		26 Bluebird	
23 Robin		28 Tufted Titmouse	

MARCH		MAY	
<i>Arrival</i>	<i>Departure</i>	<i>Arrival</i>	<i>Departure</i>
5 Purple Finch	June, 1	30 Scaup Duck	May 1
6 Meadowlark		30 Purple Martin	
11 Bronzed Grackle		1 Bobwhite	
11 Tree Sparrow	Apr. 19	2 White-eyed Vireo	May 21
11 Red-poll	Mar. 12	8 Tree Swallow	
11 Killdeer		9 Lesser Yellowlegs	
13 Herring Gull		10 Baltimore Oriole	
19 Goldfinch		10 Orchard Oriole	
19 Red-shouldered Hawk		11 Red-breasted Nuthatch	June 4
20 Red-winged Blackbird		11 Cedarbird	
20 Cowbird		11 Rose-breasted Grosbeak	May 28
21 Mourning Dove		11 Yellow Warbler	
22 Cardinal		11 Black and White Warbler	
23 Phoebe		13 Red-headed Woodpecker	
24 Vesper Sparrow		13 Warbling Vireo	
25 Flicker		14 Ovenbird	May 29
25 Field Sparrow		15 Swamp Sparrow	May 26
25 Brown Creeper		15 Northern Parula Warbler	June 5
26 Golden-crowned Kinglet	May 12	16 Golden-winged Warbler	May 17
30 Kingfisher		16 Bay-breasted Warbler	June 5
31 Brown Thrasher		16 Chestnut-sided Warbler	May 4
		16 Black-throated Blue Warbler	May 29
		16 Magnolia Warbler	June 4
		16 Redstart	June 4
		16 Nashville Warbler	June 1
		16 Whip-poor-will	
		16 Kingbird	
		17 Crested Flycatcher	
		17 Red-eyed Vireo	
		17 Blue-headed Vireo	May 20
		17 Olive-backed Thrush	June 9
		17 Wood Thrush	May 18
		17 Maryland Yellowthroat	
		17 Blackburnian Warbler	June 4
		17 Cape May Warbler	May 27
		17 Tennessee Warbler	June 6
		18 Black-poll Warbler	June 9
		18 Indigo Bird	
		18 Least Flycatcher	
		19 Wood Pewee	
		19 Yellow-throated Vireo	May 22
		19 Black-billed Cuckoo	
		20 Rough-winged Swallow	
		20 Dickcissel	
		22 Gray-checked Thrush	June 6
APRIL			
2 Sapsucker	May 24		
4 Chipping Sparrow			
11 Hermit Thrush	May 18		
11 Myrtle Warbler	June 3		
15 Towhee			
16 Ruby-crowned Kinglet	May 23		
18 Carolina Wren	Apr. 19		
18 Henslow's Sparrow	Apr. 19		
19 House Wren			
21 Spotted Sandpiper			
22 Sparrow Hawk			
23 White-throated Sparrow	May 25		
23 Barn Swallow			
23 Pine Warbler	May 16		
23 Catbird			
24 Palm Warbler	May 25		
26 Winter Wren	May 13		
28 Black-throated Green Warbler	Jun 3		
29 Chimney Swift			
30 Wilson Snipe	May 1		
30 Blue-winged Teal	May 1.		

MAY		JUNE	
Arrival	Departure	Arrival	Departure
23 Hummingbird		4 Louisiana Water Thrush	June 5
23 White-crowned Sparrow	May 24	13 Yellow-billed Cuckoo	
24 Wilson Warbler	June 3	15 Prairie Horned Lark	
24 Canada Warbler	June 7	21 Sycamore Warbler	June 22
28 Alder Flycatcher		22 Acadian Flycatcher	July 16
28 Yellow-bellied Flycatcher	June 8		
28 Night Hawk		Total number of migrants seen, 106.	
31 Grasshopper Sparrow			

BOOK REVIEW.*

Flora of the Rocky Mountains and Adjacent Plains—Colorado, Utah, Wyoming, Idaho, Montana, Saskatchewan, Alberta, and Neighboring Parts of Nebraska, South Dakota, North Dakota and British Columbia. By P. A. RYDBERG, New York. Published by the Author, 1917.*

This peaceful work of Sisypheus producing botanical manuals is still going on in the midst of war activities. Dates and facts are amassed, and new matter is added continually, and the old has to be eliminated all the time for the newer and better. On account of these incessant researches and increased knowledge the life of a manual is naturally short. Nelson's manual was copyrighted in 1909 and its successor is forced through by necessity. Before we proceed to review briefly the part of the interwoven text allotted to the flora of North Dakota, one of the "adjacent plains," may I make safe of the author's and the reader's conception, that no word of mine is to be interpreted as a criticism?

Dr. Rydberg's number of species described is 5897, and varieties are excluded from consideration, no doubt for important reasons, one of them being the desideratum of saving space. This decision to disregard varieties, perhaps without a corresponding liberality in the admittance of species which only would work then as a boomerang, has its inconvenience, which I may illustrate by this instance. Dr. Aven Nelson retained in his manual *Arnica fulgens* as a species with *A. pedunculata* and *A. monocephala* as synonyms. If Dr. Rydberg acquiesced in this ranking at first, he presumably changed his mind when he discovered that these latter two species of his

* Reported here as far as North Dakota is concerned by J. LUNELL.

had a woolly subterranean indument. In his manual the partnership with *A. fulgens* has been dissolved, and the two others have been joined in one species, *A. pedunculata*. Here it might have been quite convenient to acknowledge *A. monocephala* as a variety in place of letting it be swallowed "body and bones" by the species.

His description of *Rosa Woodsii* Lindl. comes very closely to fit in with my *R. deserta* which he places as a synonym. It remains a remarkable peculiarity that the habitat of the former is river banks and copses while the latter has been found only on nude plains with deep gravel and no other grass but bunch grass. A definite description of *R. Woodsii* was much needed, as all the manuals have separate, very divergent views of their own regarding it. The same is the case with *R. Fendleri* Crepin, whose original area (vide Flora of Montana) is the southwestern states, but in the present manual has been extended to South Dakota. My *R. poetica* from North Dakota, though quite different from the descriptions of *R. Fendleri* in Coulter's and Nelson's manuals, agrees with Dr. Rydberg's, though with some exceptions. *R. Lunellii* Greene is deservedly recognized among the roses. They number 30 species.

Another of Dr. Greene's species, *Antennaria Lunellii*, has been reduced to synonymy under *A. campestris* Rydb., which belongs to his group VII *Campestres* (defined in the key as having "leaves glabrous above." In A. M. N. Vol. II, p. 81 (1911) Dr. Greene described *A. Lunellii* thus: "Folia superne sericeo-tomentosa, indumento vix vel tardissime deciduo." In fact, this indument is permanent on the living plant during the entire season (except possibly on a small spot in the center of the leaf). The avalanche of melting snow in the earliest spring during the following season, though, is apt to sweep it away from the dead leaves.—Under *A. microphylla* Dr. Rydberg says: "*A. solstitialis* Lunell is the staminate plant, which is smaller." This is one of the reasons why I made it a var. in A. M. N. Vol. V. p. 61. (1917). The sterile *A. microphylla* is a tall and rare plant, not different in appearance or size from the fertile one. These two questions on *Antennaria* occur to me as being my sole disagreements with Dr. Rydberg's views.

The *Lesquerella arenosa* (Richards.) Rydb. we believe should be identical with *L. Lunellii lutea* A. Nels., which this author at first considered to be *L. montana* and whose habitat is "in arenosis."

The type *L. Lunellii* seems to me capable of demanding a place of its own.

The only one of our species derived from the area west of the 102nd mer. is *Ranunculus Waldronii*, a relative of *A. glaberrimus* of the west. Dr. Greene's *A. ellipticus* was mentioned as synonymous of this, but our plant was not noticed at all, though its much stronger characters than those of Dr. Greene's species might have secured for it a better fate.

I am gratified noting *Lobelia strictiflora* (Rydb.) Lunell, and the reverse *Anthopogon tonsus* (Lunell) Rydb., also *Solidago dumetorum* Lunell which we did not expect to be found so far "from home."

Aragallus angustatus Rydb. of 1907, which Dr. Nelson places as synonymous of *A. Lamberti*, is reinstated in its own right, and has in its turn outflanked our *A. Aven-Nelsonii* of 1908. The case seems to be hopeless as far as our side is concerned.

The modified description of *Euthamia camporum* Greene justifies our variety *tricostata*, though at the same time it tends to its elimination.

Rudbeckia ampla A. Nels. is revived again in spite of its author who tried to exterminate his own progeny. Likewise *Eleocharis monticola leviseta* Fernald has been resuscitated and, it is hoped, will enjoy a long life hereafter.

Physaria brassicoides Rydb. and all the other "better" names are enthusiastically welcomed.

The manuals have drawn within North Dakota the lines limiting their areas, except Gray's VII, which is extended west only to the 96th mer. Of the others Gray's VI is limited to the west and Coulter's to the east by the 100th mer. Likewise have Britton's to the west and A. Nelson's and Rydberg's to the east their lines of demarkation drawn on the 102nd mer. This condition of being in relation to the manuals a border state, a frontier state, a buffer state, has apparently been the cause why North Dakota has never been favored by the manual writers enough to become spoiled. The direct reference of a plant to N. D. has been quite a rare occurrence, but if its presence has been suggested by 'Man.—S. D., or Man.—Neb., or Man.—Tex.,' we have been well satisfied. 'Minn.—Colo., or Sask.—Ariz., or Mont.—N. Mex.' have inspired the imagination to work in curved lines, but not everybody is inclined to trace any increased number of plants from such a kind of calculation!

S. D.—Neb. in a great number of instances ought to be read N. D.—Neb. (or Man.—Neb.).

The direct mentioning is indicated by the following figures from the manuals of this century: Britton's Manual (1901) mentions N. D. 13 times, and Dakota (not indicating if N. D. or S. D. is meant) 9 times. Gray's Manual VII (1908), volunteering information outside of its area, mentions N. D. 20 times, the Dakotas 10 times, and Dakota 6 times. A. Nelson's Manual gives N. D. 3 times, the Dakotas 20 times, and Dakota 11 times. Rydberg's Manual (1917) refers to N. D. 81 times.

With an overflowing sense of appreciation for the priceless treasures of knowledge we have gathered from all these manuals and their predecessors, we are reminded of the fact, that we now are living in the era of Britton's Manual of 1901 for the east, and Rydberg's Manual of 1917 for the west. The latter's direct contribution of 81 numbers for the western part of this state, covering two sevenths of its entire area, is expected to be followed within a reasonable time by the corresponding number of 200 for the remaining five sevenths, which belong to the area of Britton's Manual, when a new edition of this comes out of press. I am confident that this estimate will be realized. With such prospective direct data of 281 numbers, and the addition of the indirect data and of the "hints", North Dakota will have a splendidly workable botanical map.

Leeds, North Dakota.

